# Under Development
# slope-to-stage application

## 1.0 General Information

### 1.1 Application Description

The slope-to-stage function will take Alaska Region slope-profile readings (also called slope readings or slope measurements) and convert them into (estimated) stage heights.
The function will take the slope reading (distance in feet and $10^{th}$ of feet plus the marker) and estimate the stage by interpolating between surveyed distances and stages. If the measured slope distance is greater than the longest surveyed distance, and stage value of "missing" will be returned.

### 1.2 Background Information

Slope profiles in the Alaska Region are in the form of a table of slope distance-stage relations determined by surveying down a stream bank from a gage marker to the edge of the stream. A slope gage consists of one or more slope markers placed at different elevations on the bank. The stages determined from these slope profiles are estimates because there are several possible errors in the measurements, including: observers not taking the same line as the surveyors from the gage marker to the stream edge, observers not properly connecting the tape to the marker and/or not pulling the tape taut, and stream bank profiles changing between surveys due to erosion processes (and/or human activities).

Readings are taken by hooking a measuring tape (marked in 10ths of feet and provided by the APRFC) to the slope marker closest to (but above) the waters edge and measuring the (shortest) distance to the waters edge. This distance and the associated marker form the "slope reading."

## 2.0 Maintenance Information

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